

Management of childhood urinary tract infection

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SUMMARY

Experience with childhood urinary tract infection is reviewed in conjunction with recent information on the management of the problem by family practitioners in the same health board. The need for bacteriological confirmation of the diagnosis in every case is confirmed and the importance of radiological investigation of the urinary tract after a first infection irrespective of age or sex is emphasised, as 17% of intravenous pyelograms and 31% of micturating cystogram examinations showed significant abnormality.

INTRODUCTION

In a recent survey on the management of childhood urinary tract infection in family practice in this area,¹ it was found that a minority of affected children have their infection documented with culture of midstream urine (MSU) and that a minority of practitioners arrange further investigations. A retrospective study of the experience of the Waveney, Massereene and Mid-Ulster Hospitals with childhood urinary tract infection has consequently been carried out to assess the possible implications of the survey findings.

PATIENTS AND METHODS

A review was made of the case sheets of 82 consecutive new referrals to the paediatric departments at the Waveney, Massereene and Mid-Ulster Hospitals in whom urinary infection was suspected or proven either initially or subsequently by culture of MSU. The review period was from January 1982 to July 1983. No children with spina bifida were included.

Twenty-nine children (21 boys, 8 girls) were aged up to 23 months (group A); 26 (5 boys, 21 girls) were between 2 and 6 years (group B); 27 (6 boys, 21 girls) were older (group C). Forty were initially referred to the out-patient department and 42 were admitted to hospital with an acute illness. Initial diagnoses are shown in the Table.

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TABLE
Initial diagnoses

<i>Diagnosis</i>	<i>Number of patients</i>	<i>Age group(s)</i>
History of urinary tract infection		
Proven	30	ABC
Suspected	10	BC
Acute episode of urinary tract infection	14	ABC
Recurrent abdominal pain	2	C
Fever and vomiting		
(i) Otitis media	10	AB
(ii) Tonsillitis	7	AB
(iii) Gastroenteritis	6	A
Jaundice for investigation	1	A
Congenital pyloric stenosis	2	A

RESULTS

All children in groups A and B had both an intravenous pyelogram and a micturating cystogram. Children in group C had initially a pyelogram alone, but a cystogram was performed if the pyelogram proved abnormal.

Abnormalities were found in 17% of the pyelogram examinations, as follows: chronic pyelonephritis (9 cases); renal calculus (1 case); renal calculus plus hydronephrosis (1 case); megaureter plus hydronephrosis (3 cases). Five of the 14 children were in group A (all boys), 4 were in group B (2 boys, 2 girls) and 5 were in group C (all girls).

The micturating cystogram was considered abnormal if there was reflux above the pelvic brim or if there was a lesser degree of reflux but with proven recurrent infection. Thirty-one per cent of the examinations were abnormal (5 boys, 14 girls). Eleven children were in groups A and B, 8 were in group C.

All of the children were commenced on a programme of long-term follow-up with repeat urine cultures to detect any recurrence. Additionally, all of the children in groups A and B with ureteric reflux above the pelvic brim and children in group C with reflux and recurrent infection had a period of antibiotic prophylaxis. Seven children have had surgery performed on their urinary tracts.

DISCUSSION

Establishing the diagnosis of urinary infection in children, especially in young children, can be difficult. This was illustrated well by two infants with vomiting and surgically proven congenital pyloric stenosis who had a coincidental urinary tract infection proven by culture of urine obtained by bladder aspiration. Difficulty was also experienced with older children. The oldest child in the series was a 13-year-old girl referred for investigation of recurrent abdominal pains. This girl admitted to no symptoms specifically related to the urinary tract, but subsequently urine cultures documented urinary infection and investigations revealed bilateral renal scarring and bilateral ureteric reflux to renal level. There were other children in whom the diagnosis could have been missed, had treatment of the illness been

commenced without first obtaining a midstream urine specimen for culture. In contrast, 10 of the children were investigated without having had an infection documented. These children were referred to an outpatient clinic because of suspected urinary tract infection and, after further elaboration of the history, it was felt that on balance it was in the children's best interest to presume that there had been previous infection(s). Six children (groups A and B) had both a pyelogram and a cystogram while the other 4 (group C) had pyelography alone. The only abnormality discovered was ureteric reflux in a girl in group B. This observation further emphasises the value of obtaining a midstream urine specimen for culture in all cases before commencing antibiotic treatment.

The majority of abnormal findings occurred in groups A and B. This may reflect the tendency for ureteric reflux to improve with age. However, it may be that groups A and B are over-represented in this study in terms of the community as a whole, because younger children tend to be iller when they develop a urinary infection, and consequently more young children are referred to the paediatric department. This in turn raises concern that there may be a higher number of older children in the community with unrecognised risk factors. Such concern is consistent with our finding that only a minority of family physicians elect to refer their patients for further investigation.¹ It is interesting that sex was not a good index of underlying abnormalities, and this supports our practice of not discriminating on the grounds of sex when considering investigations.

The role of radiological investigation of the renal tract following urinary tract infection in childhood has recently been questioned,² and it has been suggested that the high incidence of abnormalities found in hospital-based studies may be due to their intrinsic selection of younger and more seriously ill patients. However, the results of the present study tally with those of Williams,³ Dighe,⁴ and Brooks,⁵ who are all in agreement with the generally accepted guidelines that all children, irrespective of age or sex, should have radiological investigation of their urinary tracts after a first infection proven on urine culture, as the incidence of significant abnormalities found in any population group is high enough to make investigation essential.

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